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Romantic partner selection and socialization of young adolescents' substance use and behavior problems

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A B S T R A C T

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This study examined romantic partner selection and socialization of substance use (cigarettes, alcohol) and behavior problems among a sample of 78 young adolescents (6th–8th graders) over eleven months. Adolescent and romantic partner behaviors were assessed before and after relationships were initiated via school records and self-report. Most selection and socialization effects were apparent for the eighth grade adolescents (at Time 1). Prior to their relationship, eighth graders and romantic partners were alike on alcohol use. In contrast, romantic socialization effects emerged for eighth graders' cigarette use and behavior problems. The nature of the partner socialization effects depended on the combination of adolescents' and partners' pre-relationship behaviors. Eighth graders who dated partners with fewer problems showed the greatest instability in their behavior problems and partner behavior predicted greater decreased in problem behaviors among adolescents with more problems. The implications of these findings are discussed within the broader context of adolescent peer relationships.

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For many, adolescence is a time of behavioral experimentation. For example, the proportion of youth who initiate alcohol and cigarette use increases by approximately six fold between the ages of 12–16 years (SAMHSA, 2007). During this same period, more than one third of youth engage in various forms of minor delinquency, such as fighting, petty theft, or vandalism (SAMHSA, 2007). To some extent, these rising rates reflect adolescents' attempts to appear more mature and independent from parents (Moffitt, 1993; Shedler & Block, 1990). Nonetheless, the onset of these behaviors during early adolescence increases risk for later problem behaviors and psychiatric disorders (McGue & Iacono, 2005). Early alcohol use has been associated with later alcohol related problems and abuse as well as higher rates of depression, dating violence, and non-suicidal self-injury (Hasking, Momeni, Swannell, & Chia, 2008; Swahn, Bossarte, & Sullivent, 2008; Warner & White, 2003). Early cigarette use has been linked with lifetime alcohol and drug use disorders (Rohde, Lewinsohn, Brown, Gau, & Kahler, 2003). In a similar vein, early behavior problems are predictive of later illegal activities, difficulties with employment, and victimization of intimate partners and children (Moffitt, 1993).

Peer groups provide a central context for the initiation and persistence of adolescents' use of cigarettes and alcohol as well as other behavior problems (Oxford, Harachi, Catalano, & Abbott, 2001; Simons-Morton, 2002). Adolescents tend to select peers who are similar to themselves thereby shaping their exposure to alcohol, cigarettes, or problematic behavior (Arnett, 2003; Urberg, Degirmencioglu, & Tolson, 1998). Peers tend to shape and reinforce similarities over time such that affiliation

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with peers who smoke or drink or engage in problem behavior reinforces adolescents' values and provides behavioral opportunities that are not available to those who select peers who abstain from these behaviors (Allen & Antonishak, 2008; Arnett, 2003; Poulin, Dishion, & Burraston, 2001). As a result of these selection and socialization processes, adolescents and their friends tend to be similar in cigarette and alcohol use and behavior problems.

Less is known about whether these peer selection and socialization effects also operate in adolescents' romantic relationships. This is somewhat surprising given the significance of romantic relationships to adolescent development. As early as middle school, at least one third of students report having a romantic relationship in the past year (Giordano, Manning, & Longmore, 2006). Whether or not adolescents are involved in dating relationships, they are frequently at the center of adolescents' conversations, thoughts, and emotions (Richards, Crowe, Larson, & Swarr, 1998; Thompson, 1994). Their potential to shape identity and autonomy suggests that romantic partners may be influential in the ways adolescents make bids for independence from parents, including substance use and delinquency (Dowdy & Kliever, 1998; Furman & Shaffer, 2003; Kobus, 2003).

Recent data suggests that both selection and socialization processes are evident in young adolescents' romantic relationships. Simon, Wargo Aikins, and Prinstein (2008) found that adolescents tend to select partners who are similar to themselves on developmentally salient domains that are also important to friendship selection (e.g., popularity). Moreover, the combination of adolescent and partner characteristics *prior* to the relationship predicted adolescents' subsequent psychosocial adjustment. The current study extends this work to examine the relevance of romantic partner selection and socialization processes for young adolescents' engagement in cigarette or alcohol use and minor delinquency at school. We hypothesize that in order to adequately *capture the peer context*, both peer and romantic partners must be considered as co-occurring socializing agents.

Romantic partner selection

The selection of partners who engage in similar behaviors or share similar attitudes is a particularly robust finding and points to the basic social-emotional satisfaction and interpersonal ease that emerges from relationship choices based on similarity (see review by McPherson, Smith-Lovin, & Cook, 2001). Similarities in observed behavior may be particularly meaningful during the initial phases of relationship formation and may contribute to the similarities in substance use and problem behavior observed between friends (Urberg et al., 1998). There is also evidence of assortative mating for substance use and deviant behavior among adult romantic partners (Engels, Knibbe, & Drop, 1999; Kim & Capaldi, 2004; Quinton, Pickles, Maughan, & Rutter, 1993; Reynolds, Barlow, & Pederson, 2006). In one of the few prospective studies on substance use, Etcheverry and Agnew (2009) provide compelling evidence for selection effects among young adults on the basis of whether and how much each partner smokes. However, we know little about these types of selection effects during *adolescence*. In one of the few related studies, Dutch adolescents reported significant concordance in their own and their partners' alcohol use (van der Zwalau et al., 2009). However, in this as well as many other studies, reports of partner behavior were provided by participants *after* the relationship had begun, making it difficult to estimate pure selection effects.

In the current study, adolescents' and partners' reports of substance use (cigarette and alcohol) along with school reported behavior problems were obtained prior to relationship formation to estimate selection effects. We expected that adolescents would select romantic partners who were similar to themselves in substance use and behavior problems. To the extent that friend and romantic relationships share comparable features, we expected that similar criteria might be important to the selection of both types of relationship partners (Furman, Brown, & Feiring, 1999; Simon et al., 2008). In addition, early romantic partners are typically members of existing mixed-sex peer groups (Connolly, Craig, Goldberg, & Pepler, 2004) that are likely to already share common characteristics (Espelage, Holt, & Henkel, 2003). Within these groups, adolescents' friends may also encourage romantic partner similarity by discouraging the selection of partners whose behavior deviates from group norms (Brown, 1999). Hence, selection effects could be particularly strong for early adolescents, who are nearing peak susceptibility to peer conformity (Krosnick & Judd, 1982; Steinberg & Silverberg, 1986).

Romantic partner socialization

Although adolescents may choose peers who are similar, changes in behavior over time may reflect socialization processes. Many studies have been criticized for overestimating the effects of peer socialization by using cross-sectional designs, participant-reported partner data, or failure to adequately control for selection effects. Longitudinal studies are not always exempt from problems but offer stronger evidence for peer socialization. Positive reinforcement of deviant behaviors within adolescent friend dyads contributes to escalations in deviancy two years later (Dishion, Capaldi, Spracklen, & Li, 1995; Dishion, Spracklen, Andrews, & Patterson, 1996). Similarly, affiliation with friends who drink or smoke cigarettes increases adolescents' risk for substance use initiation (Engels et al., 1999; Mercken, Candel, Willems, & de Vries, 2007) and maintenance (Sieving, Perry, & Williams, 2000). These socialization effects do not necessarily reflect peer pressure or coercion *per se*; they may also reflect adolescents' curiosity in the face of opportunity, a desire for acceptance, or conformity to expected norms (Allen & Antonishak, 2008).

The current study utilized a longitudinal school-based sample to identify adolescent couples prior to relationship formation and track changes in adolescent behavior after the relationships were established. This design allowed us to estimate the socialization effects of romantic partners after accounting for selection effects. We expected that romantic

partners' substance use and behavior problems would be associated with changes in adolescents' behavior. After all, young adolescents rate their romantic partners to be at least as influential as friends on their thoughts, feelings, and behavior (Adams, Laursen, & Wilder, 2001). A romantic partner is the fourth most likely person to offer drugs to an adolescent, but is second only to a family member in terms of being difficult to refuse; approximately half of the offers from romantic partners are accepted (Trost, Langan, & Kellar-Guenther, 1999). Although van der Zwalau et al. (2009) found no evidence for romantic partner socialization on adolescents' alcohol use, these findings may reflect methodological issues resulting from source bias about alcohol use or data collected after relationships (and socialization) were initiated.

Current conceptualizations of peer socialization suggest that it is best conceived as an interaction between characteristics of both relationship partners (Hartup, 1999, 2005). In other words, some partners could be more influential than others, and some adolescents could be more open to influence than others. When adolescents and their partners exhibit similar levels of behavior problems or substance use, adolescent behavior should remain relatively stable. Similar partners may reinforce existing norms and behavior patterns, for better or worse (Adams, Bukowski, & Bagwell, 2005; Duncan, Boisjoly, Kremer, Levy, & Eccles, 2005; Simon et al., 2008). When adolescents pair with *dissimilar* partners, they may be more susceptible to behavioral change. Adolescents initially low in behavior problems or substance use who pair with partners who exhibit high levels of these behaviors may show increases in behavior problems or substance use. However, available evidence in other domains of adolescent functioning suggests that high problem partners may hold little sway over low problem youth (Adams et al., 2005; Dishion & Dodge, 2005; Simon et al., 2008). Low problem partners, however, may exert a positive influence on high problem adolescents. Recent studies document behavioral improvements among low functioning youth who pair with high functioning friends and romantic partners (Adams et al., 2005; Simon et al., 2008). Accordingly, romantic partners who abstain from substances or problem behavior might exert a positive influence on adolescents who have already begun to experiment in these areas, resulting in decreased substance use and problem behavior over time.

Because early romantic relationships unfold within peer groups (Connolly et al., 2004), we also examined whether romantic partner socialization effects were unique from that of close friends. Prospective data from a study by Etcheverry and Agnew (2009) indicate that romantic partners and friends exert independent socialization effects on the smoking behavior of college freshmen. These findings are consistent with those of Simon et al., who reported that friends and romantic partners are distinct socializing agents on various aspects of psychosocial functioning (Simon et al., 2008). In light of these findings, we expected that the hypothesized socialization effects for romantic partners would be significant even when controlling for co-occurring socialization by close friends.

Developmental considerations related to substance use and behavior problems

The period between early to middle adolescence is an important time to examine selection and socialization processes for behavior problems and substance use. Rates of behavior problems and substance use increase sharply over this period (SAMHSA, 2007; Windle, 2000). For example, rates of alcohol and cigarette use increase from 4.7 to 5.1% at age twelve to 32.3% and 37.2% at age sixteen (SAMHSA, 2007). These developmental trends indicate that age might moderate selection and socialization effects. For example, normative increases in behavior problems and substance use may render these characteristics more important to partner selection for middle than early adolescents. Similarly, socialization effects may become stronger during middle adolescence when the combination of mean level increases in these behaviors along with decreases in parental monitoring and regulation may open the door for increased partner influence (Cottrell et al., 2003). For these reasons, we hypothesized that romantic partner selection and socialization effects would be stronger for students who transitioned to middle adolescence (i.e., those initially in 8th grade) than for those who remained young adolescents (i.e., those initially in 6 and 7th grade) over the course of the study.

The current study

The purpose of the current study was to examine romantic partner selection and socialization effects on young adolescents' substance use and behavior problems. Towards this end, we identified adolescent couples within a longitudinal school-based sample. Using a follow-back design, we traced adolescents and romantic partners to a prior data collection to examine pre-relationship similarities. This allowed for a relatively pure estimation of selection effects, as neither adolescents nor partners identified themselves as being romantically involved at that time. Pre-relationship characteristics of romantic partners were then used to estimate the socialization effects of romantic partner characteristics in predicting changes in adolescents' substance use and behavior problems after relationships were established. Based on the literature reviewed, we hypothesized that adolescents, friends, and romantic partners would be similar to each other on alcohol use, cigarette use, and behavior problems. These similarities were expected to be stronger for those adolescents initially in the 8th grade versus those adolescents initially in the 6th and 7th grade. Adolescents' and partners' levels of substance use and behavior problems at Time 1 were expected to interact to predict adolescent behavior at Time 2. For adolescents who were already exhibiting high levels of these behaviors prior to the relationship, we expected that those who paired with partners who were low versus high on these behaviors would show behavioral improvement as compared to those who paired with partners who were similarly high. Stronger partner socialization effects were expected for students who transitioned to middle adolescence (i.e., those initially in the 8th grade) between Time 1 and Time 2.

Methods

Participants

Participants included 78 adolescents (48% female) who were in the sixth (32%), seventh (35%), and eighth (33%) grade at the beginning of the study. Adolescents in the sixth and seventh grade were combined to form one group ($n = 52$) while the adolescents in the 8th grade were considered a second group ($n = 26$). The ethnic composition of the sample included 87% European American, 2% African American, 4% Asian American, 2% Latino American, and 6% from mixed ethnic backgrounds. Participants were enrolled in public schooling within a town of fairly homogenous middle-class socioeconomic status (per capita income = \$32,301). According to school records, 11% of children were eligible for free/reduced lunch. These participants were part of a larger study ($n = 520$) designed to examine developmental trajectories of depression during adolescence.

The current sample included adolescents who indicated on the Networks of Relationship Inventory (NRI; Furman & Buhrmester, 1985) that they began a romantic relationship between Time 1 and Time 2. Specifically, participants were asked whether they had a boy/girlfriend, the name of this person, and how long this person had been their boy/girlfriend. For the larger study, all sixth through eighth grade students were invited to participate in the first phase of data collection (Time 1). Consent forms were returned for 92% of families ($n = 784$); of these 80% of parents gave consent for their child's participation ($n = 637$, 74% of total population). Students who were absent one of the testing days ($n = 10$), provided incomplete data ($n = 15$), or refused to assent ($n = 4$) were excluded from analyses, yielding a final sample of 598 participants at Time 1. A total of 520 (87%) of these participants were available for testing eleven months later at Time 2, when students were in grades seven through nine. Attrition was due to participants moving away from the area ($n = 36$), absenteeism ($n = 7$), incomplete data ($n = 30$), and refusal to participate ($n = 5$). No significant difference was found between adolescents who participated in two versus one time points.

On average, romantic relationships lasted 13.63 weeks ($SD = 19.10$). Because romantic partner and best friend data were needed to examine selection and socialization effects, only those adolescents whose best friend and romantic partner were also participants in the study were included in our sample. To avoid dependency in the data, one member of any reciprocally nominated romantic dyad was randomly dropped from the sample. This resulted in a data set in which each adolescent served as only a target participant or as a romantic partner. Similarly, no adolescent appeared as both a friend and a romantic partner in the data set. We did not drop any target adolescent who was named as another target adolescent's best friend because friendships were not the focus of the study and doing so could have resulted in a biased sample of adolescents whose best friends were not dating.

The 78 target participants were compared to 62 participants who reported a romantic relationship at Time 2 but who did not meet other study criteria (i.e., the best friend or romantic partner did not also participate in the study). No significant group differences emerged for gender, grade, smoking, drinking, or behavior problems, nor were there any differences when these analyses were re-run separately for the 6th and 7th or 8th graders. Similar analyses were conducted to compare adolescents in the larger sample who were and were not dating. No differences were found between non-dating and dating adolescents in terms of smoking, drinking, or behavior problems. When these analyses were re-run by grade, again no differences emerged for 8th graders on smoking, drinking or behavior problems; however, for 6th and 7th graders, there was a significant trend with dating adolescents demonstrating higher rates of drinking, $t(518) = 1.89$, $p = .06$, $M = 1.72$, $SD = .67$ than non-dating adolescents $M = 1.51$, $SD = .57$.

Procedure

A letter introducing the study was mailed to the homes of all potential participants, and a consent form was sent home with each student. Parents were asked to either grant or deny their consent for their child's participation, and adolescents were asked to return the consent form regardless of their parent's decision. At both time points, questionnaires were administered to adolescents in their classrooms over two days. Each participant received a small token of appreciation (e.g., a key chain), a \$5 gift certificate, and a raffle entry for a Sony Playstation 2 or Microsoft Xbox.

Measures

Substance use

Adolescents' substance use was assessed at Time 1 and Time 2. Cigarette use was assessed in response to the item "during the past 30 days, on how many days did you smoke cigarettes?" while alcohol use was measured in response to the item "in the past 30 days, on how many days, did you have at least one drink of alcohol?" For each item adolescents choose a response ranging from 1 to 7 with 1 indicating "0 days", 2 indicating "1–2 days", 3 indicating "3–5 days", 4 indicating "6–9 days", 5 indicating "10–19 days", 6 indicating "20–29 days", and 7 indicating "all 30 days".

School-based behavioral problems

Information concerning school-based behavior problems was drawn from school records compiled at both Time 1 and Time 2. Each participant's behavior problem score reflected a count of the number of times they had been referred to the principal's office for committing an infraction such as being truant, being disrespectful, fighting, or damaging property.

Results

Preliminary analyses

Means and standard deviations for all study measures are presented in Table 1 for target adolescents, romantic partners, and best friends for the whole sample and by 6th and 7th grade and 8th grade groups. Data for the entire sample indicate that target adolescents had significantly more cigarette use than best friends ($t(77) = 2.41, p < .05$), significantly more alcohol use than both romantic partners ($t(77) = 2.75, p < .01$) and best friends ($t(77) = 2.45, p < .05$), and significantly more behavior problems than either romantic partners ($t(77) = 3.03, p < .01$) or best friends ($t(77) = 2.78, p < .01$). Eighth grade target adolescents demonstrated significantly higher rates of cigarette use than their best friends ($t(29) = 2.57, p < .05$), significantly higher rates of alcohol use than their romantic partners ($t(29) = 3.02, p < .01$) and best friends ($t(29) = 2.62, p < .05$) and significantly higher rates of behavior problems than either their romantic partners ($t(29) = 2.30, p < .05$) or best friends ($t(29) = 2.27, p < .05$). Notably, the differences between target adolescents, best friends, and romantic partners are not due to sample selection effects given that subsample participants were found not to differ in either substance use or behavior problems from the larger sample. Also, assignment as target adolescents versus romantic partners was random in the study. Taken together, these factors suggest that these differences may be random effects.

Eighth grade target adolescents engaged in more cigarette use ($t(76) = 5.35, p < .001$), alcohol use ($t(76) = 5.45, p < .001$) and behavior problems ($t(76) = 2.16, p < .05$), than 6th and 7th grade target adolescents. Eighth grade romantic partners demonstrated more cigarette use ($t(76) = 3.10, p < .01$) and alcohol use ($t(76) = 2.50, p < .05$) than 6th and 7th grade romantic partners; however, there were no differences in behavior problems. Finally, 8th grade best friends also exhibited higher rates of cigarette use ($t(76) = 2.43, p < .05$) and alcohol use ($t(76) = 2.43, p < .05$) than 6th and 7th grade best friends, while also not demonstrating significant differences in behavior problems.

Intercorrelations between target adolescents' Time 1 cigarette use, alcohol use, and behavior problems were also examined in order to assess their co-occurrence (see Table 2). For all target adolescents, cigarette use, alcohol use, and behavior problems were highly correlated. Correlations could not be computed for the 6th and 7th grade participants due to invariability in their cigarette and alcohol use at Time 1 (i.e., 0% of 6th and 7th grade adolescents reported using cigarettes or alcohol in the past 30 days). Among 8th grade participants, behavior problems were significantly correlated with both cigarette and alcohol use, while there was only a trend towards significance in the association between cigarette and alcohol use.

Pearson correlations between target adolescents' cigarette use, alcohol use, and behavior problems at Time 1 and Time 2 were also calculated to examine the stability of these behaviors over time. Again, for cigarette and alcohol use, correlations could not be computed for the 6th and 7th grade participants due to invariability in their use at Time 1. Target adolescents' cigarette use was moderately stable when calculated for all adolescents and for just the 8th grade adolescents, $r = .31, p < .001$ and $r = .38, p < .05$ respectively. Alcohol use was also moderately stable across time with $r = .31, p < .001$ for all target adolescents, and $r = .32, p = .09$ for the 8th grade participants. Similarly, behavior problems were relatively stable from Time 1 to Time 2 for the entire sample, $r = .27, p < .05$; however, the correlation coefficients were not significant for either the 6th and 7th grade group, $r = .11$, or the 8th grade group, $r = .29$.

Partner selection

The first aim of this study was to examine romantic partner selection effects by assessing pre-relationships similarities. Intraclass correlations between adolescents' and romantic partners' Time 1 cigarette use, alcohol use, and behavior problems are reported in Table 3. Each adolescent in the study could only serve as a romantic partner or best friend. In situations in which an adolescent was named as both a friend and a romantic partner, one participant was randomly dropped from the data so as to ensure independence of the data. Findings for the larger sample of adolescents and romantic partners revealed significant similarity in cigarette and alcohol use. Given the lack of variability in cigarette and alcohol use among 6th and 7th graders, intraclass correlations could only be computed for the 8th grade adolescents. Findings indicated that 8th grade

Table 1

Means and standard deviations for all primary Time 1 variables.

Time 1 Variables	Target Adolescents M (SD)	Best Friends M (SD)	Romantic Partners M (SD)
Cigarette Use	.03 (.12) ^a	.01 (.05) ^{ab}	.01 (.08)
6th & 7th grade	.00 (.00) ^{***}	.00 (.00) [*]	.00 (.00) [*]
8th grade	12 (21)^a	03 (10)	05 (15)^{ab}
Alcohol Use	.03 (.12) ^{ab}	.01 (.05) ^{ab}	.01 (.04) ^{b**}
6th & 7th grade	.00 (.00) ^{***}	.00 (.00) [*]	.00 (.00) [*]
8th grade	12 (21)^{ab}	03 (10)^{b**}	02 (08)^{ab}
Behavior Problems	1.13 (3.28) ^{ab}	.13 (.45) ^{ab}	.07 (.36) ^{b**}
6th & 7th grade	.63 (2.45) [*]	.13 (.45)	.06 (.39)
8th grade	2.35 (4.72)^{ab}	.13 (.46) ^{ab}	.09 (.29) ^{b*}

Note. ^{ab}Scores with same letter superscript denote significant differences between target adolescent and best friend and romantic partner means at ^{*} $p < .05$, ^{**} $p < .01$, and ^{***} $p < .001$; Scores in bold font denote significant differences in the means of 6th and 7th grade versus 8th grade adolescents within that column for that Time 1 variable at ^{*} $p < .05$, ^{**} $p < .01$, and ^{***} $p < .001$.

Table 2

Correlations among adolescents' cigarette use, alcohol use, and behavior problems at Time 1.

	Cigarette Use	Alcohol Use	Behavior Problems
Cigarette Use		.45***	.49***
Alcohol Use	.32 ^T		.44***
Behavior Problems	.58**	.51*	

Note. Numbers above the diagonal are for the entire sample while numbers below the diagonal are for the 8th grade group. * $p < .05$, ** $p < .01$, *** $p < .001$, ^T = Trend.

adolescents and romantic partners were not similar in terms of cigarette use but were similar in their alcohol use. No similarities were observed for behavior problems for all adolescents or for 8th graders; however among the 6th and 7th graders, romantic partners and adolescents were significantly alike.

We expected to replicate extant findings of similarities between adolescents and their best friends' substance use and behavior problems. In the whole sample, significant similarity in cigarette and alcohol use was observed; however, no similarities for behavior problems were apparent. Although 8th graders were not similar to their best friends in levels of behavior problems, they were similar in their cigarette and alcohol use. Sixth and 7th grade, adolescents and their best friends were alike in terms of behavior problems; however intra-class correlations could not be computed for cigarette and alcohol use due to invariability in usage for this age group.

Similarities between adolescents' best friends and romantic partners were weaker than anticipated. Only 8th graders' best friends and romantic partners were similar in their levels of behavior problems. No similarities emerged between friends and romantic partners on either cigarette or alcohol use.

Partner socialization

The second aim of this study was to examine romantic partner socialization for adolescents' substance use and behavior problems by assessing whether romantic partners' pre-relationship characteristics predicted adolescents' behaviors over time. Socialization effects were estimated after accounting for co-occurring influence of best friends. We hypothesized that socialization effects would emerge as interactions between adolescent and partner characteristics. We also expected that these effects would be moderated by age, such that romantic partners' behaviors would be stronger predictors for 8th grade rather than 6th and 7th grade adolescents.

Data analytic strategy

To test these hypotheses, we conducted a series of regression analyses to assess the main and interactive effects of the pre-relationship behaviors of adolescents and romantic partners on adolescents' behavior at Time 2 (Baron & Kenny, 1986; Holmbeck, 2002). The dependent variables were cigarette use, alcohol use, and behavior problems. Prior to the analyses, all predictors were centered to reduce multicollinearity (Aiken & West, 1991). Due to the invariability in the Time 1 cigarette and alcohol use among the 6th and 7th graders, regression analyses for these variables were only completed for the 8th grade. For each analysis, the corresponding Time 1 score was entered in step 1 to assess stability over time. Best friends' Time 1 scores were entered into the second step to control for co-occurring friend socialization. Romantic partners' Time 1 scores were entered into the third step to examine the main effect of romantic partners' characteristics. Finally, the product terms of adolescents' and romantic partners' Time 1 scores were entered into the fourth step. The regression predicting Time 2 behavior problems also incorporated main and interaction effects for grade (dummy coded as 0 = 6th or 7th grade and 1 = 8th grade). In step 4, the product terms included grade and adolescents' Time 1 scores, grade and romantic partners' Time 1 scores, and adolescents' and romantic partners' Time 1 scores. The three-way interaction between grade, adolescent, and romantic partner's Time 1 scores was entered in step 5 to assess whether the interactive effects of adolescents' and romantic partners' Time 1 behavior on adolescents' Time 2 behavior varied by grade.

All significant adolescents by partner interactions were subsequently probed following procedures described by Holmbeck in which slope estimates are calculated and examined at high ($M + 1$ SD) and low ($M - 1$ SD) levels of the moderator (Aiken & West, 1991; Holmbeck, 2002). Significant interactions were probed twice, once with romantic partners' pre-relationship behavior as the moderator and a second time with adolescents' pre-relationship behavior as the moderator. This strategy allowed us to determine how adolescents' behavior over time varied according to partners' pre-relationship behavior and by

Table 3

Correlations among Time 1 variables for adolescent, romantic partners, and best friends.

	Adolescent – Romantic Partner			Adolescent – Best Friend			Romantic Partner – Best Friend		
	All	6th & 7th	8th	All	6th & 7th	8th	All	6th & 7th	8th
Cigarette use	.24**	–	.13	.40***	–	.35*	–.02	–	–.09
Alcohol use	.56***	–	.53***	.40***	–	.35*	.02	–	–.07
Behavior problems	.17	.27*	.04	.04	–.06	.10	.08	–.04	.60**

* $p < .05$, ** $p < .01$, *** $p < .001$.

adolescents' pre-relationship behavior. The two are related, though not identical ways of decomposing and understanding the observed moderator effects.

Examining the moderating effects of *romantic partner* characteristics identifies whether romantic partners are *socializers* of adolescents behavior. Specifically, the analyses examine whether romantic partners are stronger socializing agents when they are high versus low on a given behavior. The post-hoc analyses assess the association between adolescents' behavior at Time 1 and Time 2 (i.e., stability) when partners exhibit high versus low levels of substance use and behavior problems. Thus, romantic partner socializing is evidenced by a lack of stability in adolescents' characteristics over time as indicated by a non-significant slope (i.e., unstandardized beta). Examining the moderating effects of *adolescents'* pre-relationship characteristics identifies whether target adolescents are *socialized* by their romantic partners. Specifically, the analyses examine whether target adolescents who are high versus low on a given behavior are more open to socialization. The post-hoc analyses assess the association between partners' behavior at Time 1 and adolescents' behavior at Time 2 when adolescents were initially high versus low in substance use of behavior problems. As such, adolescents' socialization is evidenced by a significant slope.

Controlling for co-occurring socialization by adolescents' best friends in step 2 of the analyses provided a conservative test of romantic partner socialization. To the extent that friend and partner effects are confounded, this strategy could underestimate romantic partner socialization. To examine this possibility, we re-ran the regressions described above without controlling for best friend characteristics (i.e., eliminating step 2 in the regressions). The pattern of results was very similar to that obtained when controlling for best friend characteristics, with almost identical beta weights and ΔR^2 values. No additional significant direct effects emerged for romantic partners' Time 1 characteristics. The similarity of results across the two sets of analyses suggested that romantic partner predictors were not the same as the friend predictors and did not produce additional or different predictors when entered alone. Therefore, the results presented below are those from the analyses that include best friend values as a covariate in step 2.

Cigarette use

For 8th grade adolescents, romantic partners' Time 1 cigarette use predicted instability in adolescents' cigarette use. Specifically, results revealed both a direct effect of romantic partners' Time 1 cigarette use (β at the step = .63, $p < .001$) and a two-way interaction effect between romantic partners' and adolescents' Time 1 cigarette use (β at the step = .79, $p < .001$) on adolescents' Time 2 use (see Table 4). When probing the interactions with the *romantic partner* as the moderator, a significant slope is indicative of limited romantic partner socializing, while a non-significant slope indicates that the romantic partner has a socializing effect. As seen in Fig. 1, results from the post-hoc probing of the moderating effects of adolescents' *romantic partners* indicated that romantic partners who use high levels of cigarettes have limited socializing influence ($b = .65, p < .001$) while those who use low levels of cigarettes had a strong socializing effect ($b = -.26, ns$). When probing the interaction with the *adolescent* as the moderator, a significant slope indicates that adolescents are being socialized by their romantic partner. Results from post-hoc probing of the moderating effects of *adolescents'* initial cigarette use indicated that adolescents who were high ($b = .37, p < .01$) but not low ($b = -.26, ns$) on initial cigarette use were socialized by their romantic partners (See Fig. 2). Taken together, the post-hoc probing with both romantic partners and adolescents as the moderators indicate that among adolescents who were initially high on cigarette use, those who dated a partner with low cigarette use demonstrated decreases in cigarette use at Time 2, while those who dated a partner high in cigarette use did not show a similar decrease.

Table 4

Summary of hierarchical regression analyses examining main and moderating effects of romantic partner characteristics on adolescents' cigarette use, alcohol use, and behavior problems at Time 2.

	Cigarette Use (8th grade)				Alcohol Use (8th grade)				Behavior Problems			
	β step	β	B	ΔR^2	β step	β	B	ΔR^2	β step	β	B	ΔR^2
Step 1				.14*				.10				.10*
T1 Adolescent (Ad) Behavior Grade ^a	.38*	.18*	.25*		.32	.35	.36		.23*	.17	.27	
									.16	.00	-.01	
Step 2				.06				.05				.17***
T1 Best Friend Behavior	-.25	-.12	-.20		-.23	-.21	-.46		.42***	-.01	-.01	
Step 3				.38***				.00				.03
T1 Romantic Partner (RP) Behavior	.63***	-.01	-.01		.08	.30	.87		.18	.00	-.03	
Step 4				.18***				.00				.35***
T1 Ad \times RP	.79***	.79***	3.11***		-.23	-.23	-1.21		.75***	-.11	-.27	
T1 Ad \times Grade ^a									.45***	.00	.01	
T1 RP \times Grade ^a									.72***	.00	-.06	
Step 5												.29***
T1 Ad \times RP \times Grade ^a									.96***	.96***	7.69***	
Total R ²				.76***				.15				.94***

Note: At each step, ΔR^2 presented is for the step and β and B are for the final model, * $p < .05$. ** $p < .01$. *** $p < .001$. ^a = the main and moderating effects of grade were only examined for behavior problems due to the lack of variability in cigarette and alcohol use among 6th and 7th graders.

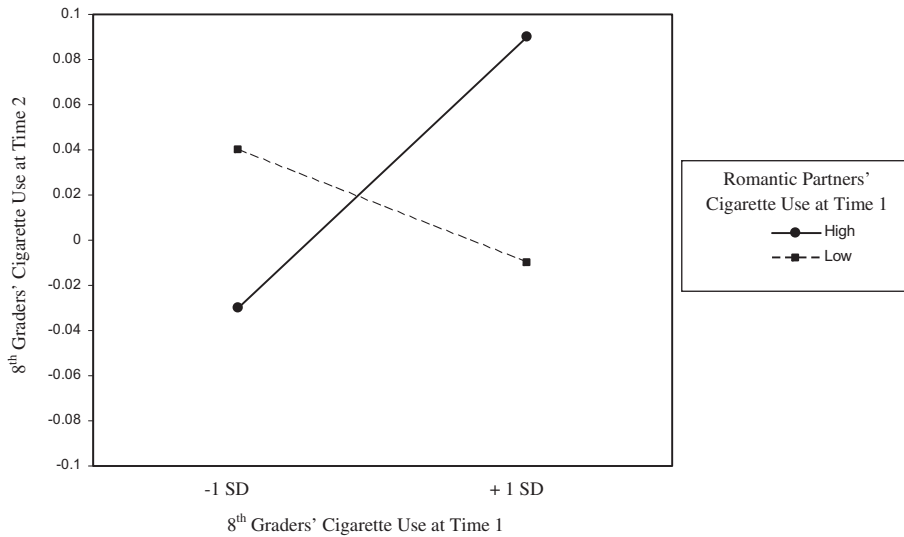


Fig. 1. Graph of simple slopes for interactions between adolescent and romantic partner Time 1 cigarette use in predicting 8th graders' Time 2 cigarette use with romantic partners' cigarette use as the moderator.

Alcohol use

Among 8th grade adolescents, romantic partners' Time 1 alcohol use was not associated with adolescents' Time 2 alcohol use. Specifically, there was neither a direct effect of romantic partners' amount of alcohol use nor an interaction effect between adolescent and romantic partner alcohol use for 8th graders (See Table 4).

Behavior problems

Romantic partners' behavior problems at Time 1 were not directly associated with adolescents' Time 2 behavior problems. As hypothesized, however, the interaction between adolescents' and partners' Time 1 behavior problems was a significant predictor (β at the step = .75, $p < .001$), and this interaction was further moderated by grade (β at the step = .96, $p < .001$) (See Table 4). Results from post-hoc probing of the moderating effects of *romantic partners* for 6th and 7th graders indicated that adolescents' Time 1 behavior problems were predictive of their Time 2 behavior problems when their romantic partners' initial behavior problems were both high ($b = .25, p < .01$) and low ($b = .29, p < .001$). When probing interactions with the romantic partner as a moderator, a significant slope is reflective of limited romantic partner socializing; therefore, these findings suggest that romantic partners did not socialize 6th and 7th graders adolescents' behavior problems.

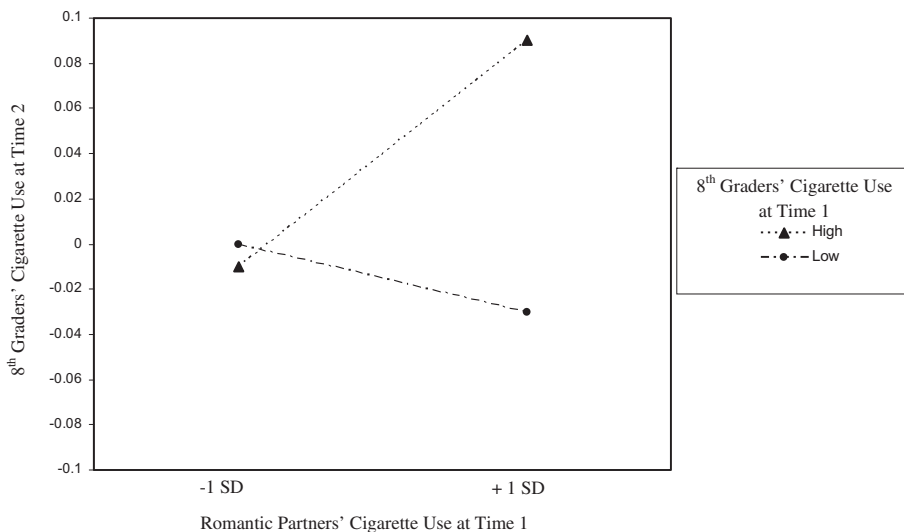


Fig. 2. Graph of simple slopes for interactions between adolescent and romantic partner Time 1 cigarette use in predicting 8th graders' Time 2 cigarette use with adolescents' cigarette use as the moderator.

Probing the interactions with the adolescent as the moderator is reflective of whether adolescents are socialized; as such, significant slopes indicate that adolescents are socialized. Results from post-hoc probing of the moderating effects of 6th and 7th grade adolescents' initial behavior problems indicated that neither adolescents who were initially high ($b = -.34$, ns) or low ($b = .28$, ns) on behavior problems were socialized. When considering both set of post-hoc analyses, these findings suggest that regardless of 6th or 7th grade adolescents' initial level of behavior problems, romantic partners were not socializers.

The results for the 8th grade adolescents, however, differed. Fig. 3 illustrates the association between 8th grade adolescents' Time 1 and Time 2 behavior problems when romantic partners' initial behavior problems were high versus low. Romantic partners were socializers of adolescents' Time 2 behavior problems when their own behavior problems were initially low ($b = -.24$, ns) but not high ($b = .79$, $p < .001$). Fig. 4 illustrates the association between romantic partners' behavior problems at Time 1 and adolescents' behavior problems at Time 2 for 8th grader target adolescents who initially had high versus low levels of problems. Post-hoc analyses indicated that both target adolescents who were initially high and low on problem behaviors were socialized; however, adolescents who were high ($b = 8.27$, $p < .001$) on behavior problems at Time 1 were more socialized than those adolescents who were initially low ($b = -7.44$, $p < .01$). When taken together the probing from both directions indicated that both adolescents who were initially high and low on behavior problems were influenced by their partners' behavior problems; however, those who were initially high on behavior problems demonstrated greater decreases in problem behavior when dating a low problem partner than those who dated a partner high on behavior problems. Stated another way, both adolescents who were initially high and low on behavior problems were influenced by their partners' behavior problems; however, those who were initially high on behavior problems were influenced more by their partners' level of behavior problems.

Discussion

The results of this study provide additional evidence for the significance of romantic partner characteristics to adolescent development. Using a school-based longitudinal sample, dating couples were traced to a time prior to their romantic relationship to assess similarities between adolescents, romantic partners, and best friends. In capturing the full peer context, we found that controlling for initial similarities and co-occurring socialization by best friends, romantic partners' behavior problems and substance use predicted change in adolescents' behavior, either alone or in combination with adolescents' pre-relationship status.

Similarities between adolescents, romantic partners and best friends are not surprising given that young adolescents' friend and romantic relationships emerge and evolve within peer groups. Peer groups and friend dyads exert selection and socialization effects on adolescent substance use (Kiuru, Burk, Laursen, Salmela-Aro, & Nurmi, 2010). Homophily in friend relationships combined with the potential for friends to shape adolescents' choice of romantic partners could potentially lead researchers to over-estimate of romantic partner selection effects. However, our findings of pre-relationship similarities between adolescents and romantic partners point to the importance of adolescents' own characteristics in defining the pool of their potential romantic partners.

Socialization effects, on the other hand, reflect the extent to which romantic partners influence adolescents' behavior and do not require the presence of selection effects. For example, partners' substance use may influence adolescents' substance

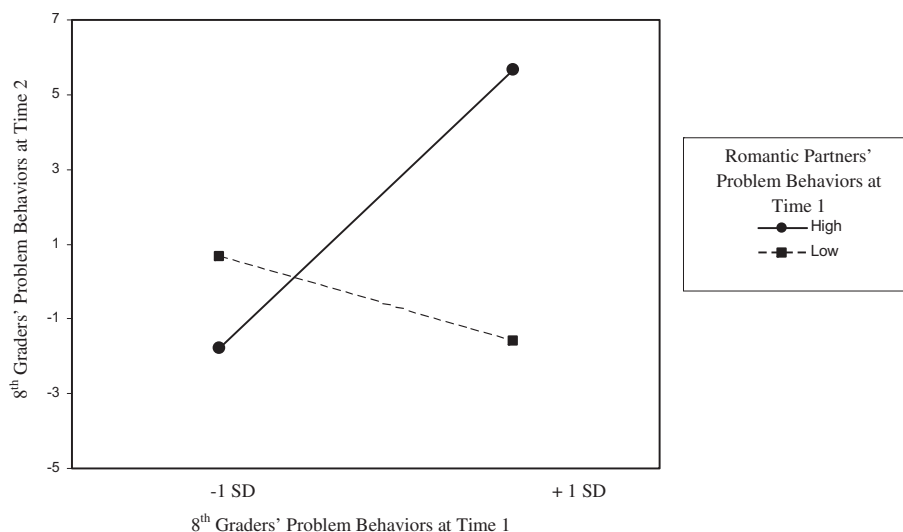


Fig. 3. Graph of simple slopes for interactions between adolescent and romantic partner Time 1 behavior problems in predicting 8th graders' Time 2 behavior problems with romantic partners' behavior problems as the moderator.

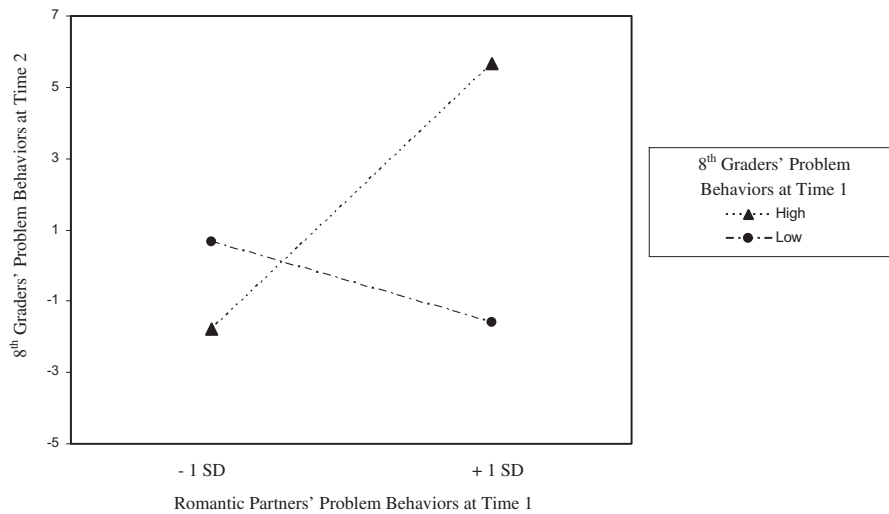


Fig. 4. Graph of simple slopes for interactions between adolescent and romantic partner Time 1 behavior problems in predicting 8th graders' Time 2 behavior problems with adolescents' behavior problems as the moderator.

use regardless of its salience to interpersonal attraction. This point is important because it increases youths' opportunities to experience and learn from partners who are unlike themselves at a time when they are also actively defining their identities (Furman & Shaffer, 2003). The pairing of similar partners should result in behavioral stability. However, mismatches between adolescents' and partners' substance use or behavior problems present opportunities for behavioral change as a function of their exposure to a significant other who is different from themselves on a developmentally salient characteristic. Adolescents with higher levels of substance use or problem behavior may accommodate their behavior to more closely approximate a partner who rarely engages in these behaviors. Conversely, low levels of substance use and problem behavior may increase in the presence of a romantic partner who models and provides opportunity for greater engagement in problem behavior and substance use.

In our sample of middle school students, romantic partner selection and socialization effects for substance use and problem behavior varied by age. Age moderated effects were not unexpected, given developmental trends in these behaviors; yet they highlight the importance of considering the ways in which selection and socialization effects might vary according to developmental shifts in social and personal needs (Bukowski, Sippola, & Newcomb, 2000).

Selection and socialization in early adolescence

Sixth and seventh graders tended to date partners who had similar levels of behavior problems. They were also similar to their best friends on behavior problems, although this finding may reflect both selection and socialization effects since these friendships were already established. However, we found no evidence for romantic partner socialization of problem behavior. Although young adolescents' problem behavior showed instability over the eleven month period, neither friend nor romantic partner characteristics contributed to these changes.

The lack of selection and socialization effects for cigarette and alcohol use in our sample may reflect methodological limitations of the current study rather than an absence of effects. There is ample evidence that close peer relationships are a robust predictor of the initiation and trajectories of young adolescents' substance use (Duncan, Duncan, & Strycker, 2006; Kobus, 2003; Van Der Vorst, Vermulst, Meeus, Dekvic, & Engels, 2009). The relatively low rates of substance use in our sample during early adolescence, while similar to national estimates (2.1% for cigarettes, 3.4% for alcohol among 12–13 year olds; SAMHSA, 2007) posed a significant challenge for detecting romantic partner effects. Thus, larger-scale studies are required to identify a sufficient number of young romantic couples prior to relationship initiation in order to have sufficient statistical power for assessing romantic partner selection and socialization effects on adolescents' substance use.

Selection and socialization during the transition to middle adolescence

In contrast to the findings for sixth and seventh graders, both selection and socialization emerged for eighth grade participants. It is worth noting that this group of participants transitioned to high school between the two assessments, and this change in school context may have contributed to our age effects in ways that warrant additional study.

Eighth graders and their romantic partners shared similar levels of drinking but were not similar in their smoking or behavior problems. Best friends, on the other hand, were similar in both alcohol and cigarette use. Overall, these findings suggest that substance use appears to gain importance for partner selection in intimate relationships as these behaviors

become more salient dimensions of adolescents' social worlds (SAMHSA, 2007; Windle, 2000). The lack of romantic partner selection effects for cigarette use warrants further attention. Although smoking and drinking may frequently co-occur, they are not equally salient selection criteria at this age. One reason for this may be that smoking and drinking behavior have different meanings. Although both may signal perceived maturity or independence, drinking may uniquely signal a mode of social coping that pulls for selective partnering (Kuntsche, Knibbe, Gmel, & Engels, 2005; Moffitt, 1993). Put simply, early drinking may have particular social motives that attract similar others. Alternatively, partner similarity in alcohol use may reflect a selection effect based on some other criteria that is associated with drinking but not smoking, such as pubertal development, genetic predispositions, or some underlying personality characteristic (Arnett, 2003; Poelen et al., 2008; Wichstrom, 2001).

Whatever the source, the observed selection effects, including age and relationship variations, are noteworthy and have implications for adolescents' exposure and opportunity to engage in early drinking and smoking. For example, when adolescents who have begun to experiment with alcohol choose similar partners (and friends) their exposure to alcohol may increase accordingly. Those who have not begun to experiment and date similar partners should encounter fewer situations involving alcohol. Furthermore, selection effects may also have implications for subsequent relationships. For example, Arnett (2003) noted that non-smokers avoid forming friendships with adolescents who chose best friends who smoke. Adolescents may face similar consequences for their potential romantic partner choices, based on their choice of friends. These possibilities are important topics for future research.

The developmental course of these selection criteria within and across relationships also warrants additional attention. The salience of substance use and problem behaviors to partner selection might change as their meanings shift with development. As substance use steadily increases through young adulthood, its strength as a signal of behavioral autonomy may wane (SAMHSA, 2007; YRBS, 2007). Accordingly, selection effects for certain commonly used substances, such as alcohol, may decrease over time (Sieving et al., 2000). This may be especially true for alcohol, where age-related increases in use are not only common but also generally approved. On the other hand, trends towards more negative public opinion about smoking may raise its salience as a selection criterion (Etcheverry & Agnew, 2009). Unlike substance use, behavior problems tend to decrease during later adolescence (Van Lier & Crijnen, 2005; Windle, 2000). Although they may be broadly appealing to youth during early adolescence, later on, they may only be attractive to similar others. In this way, selection effects may remain strong over time but the basis of selection might shift from attraction based on broad appeal (Newcomb, Bukowski, & Pattee, 1993) to attraction based on similarity (Byrne, 1997; Feingold, 1988). In addition, behavior problems are more common among males and could be more appealing to females seeking male partners than vice versa (Pelligrini & Long, 2003; Rulison, Gest, Loken, & Welsh, 2010). Sample limitations precluded testing for gender-specific selection criteria, but their presence could have attenuated any selection effects for behavior problems.

Socialization effects

Even with a conservative data analytic strategy that controlled for co-occurring best friend socialization, romantic partners' levels of smoking and behavior problems significantly predicted corresponding changes in adolescents' behaviors. This finding builds on prior assertions that romantic partners are unique and significant socializing agents (Collins, 2003; Furman & Simon, 2008). Furthermore, the nature of the effects support a growing consensus that peer socialization involves the interaction of target and partner characteristics to produce either positive or negative change (Adams et al., 2005; Allen & Antonishak, 2008; Hartup, 2005; Simon et al., 2008). The stability in behavior demonstrated by adolescents who dated partners with similar levels of smoking and problem behavior may reflect partners' reinforcement of existing norms, social opportunity, and behavior (Dishion et al., 1995). In support of this idea, when adolescents who were initially high on problem behavior dated similar partner, they changed less than their peers who had similar levels of problem behaviors but paired with low problem partners. Not only did high problem adolescents change more when they dated low problem partners, but low problem partners predicted more change than high problem partners. A similar pattern emerged for cigarette use, where adolescents who smoked more prior to the relationship maintained their usage when their partners also smoked. In contrast, those who smoked more prior to their romantic relationship actually reduced their usage if their partners smoked only little or not at all. Taken together, these data lend further credence to prior reports where high functioning partners appear to help mitigate the problems of poorly adjusted youth (Adams et al., 2005; Simon et al., 2008). Similar findings have been noted among adult couples where patterns of childhood conduct disorder appear to be disrupted by the presence of supportive, non-deviant partners (Laub, Nagin, & Sampson, 1998; Quinton et al., 1993; Werner & Smith, 2001). Interestingly, the pairing of low problem adolescents and high problem partners did not predict significant change in levels of cigarette use or problem behavior. In fact, high problem partners predicted more behavioral stability than low problem partners, suggesting that low problem adolescents may be less vulnerable to partner influence in these domains.

The pattern of socialization effects clearly demonstrates that partners need not be similar to adolescents in order to be influential. Although adolescents may not select romantic partners based on cigarette use or problem behavior, they do appear to socialize one another in these domains. In contrast, the effects for alcohol use were confined to romantic partner selection. Romantic partners' initial levels of alcohol use did not predict eighth graders' subsequent alcohol use. Although drinking generally increases from early to mid-adolescence, the timing of our assessment may have been too early and the interval between assessments too brief to detect emergent patterns of alcohol use and socialization. Alternatively, trajectories of alcohol use during middle adolescence may depend on not only partner use but also partner age. In support of this idea, instability in the drinking patterns of 12–15 year olds appears to be largely accounted for by youths' tendency to adjust their

drinking behavior to resemble that of an older friend (Popp, Laursen, Kerr, Stattin, & Burk, 2008). Similar effects may exist for romantic partners, and they may be more notable for alcohol than cigarette use. This study is among the first to estimate true selection and socialization effects of romantic partners for young adolescents' behavior problems and substance use. Longer-term studies with larger samples are needed to replicate the current findings, assess their duration, and examine potential carry over to subsequent romantic relationships. Attention to other, more complex processes, including the socialization effects of partner characteristics across domains of functioning, are also warranted (e.g., Kim & Capaldi, 2004; Simonelli & Ingram, 1998).

Finally, several factors should be considered when interpreting the findings from this study. Initial differences between adolescents' and romantic partners' behavior problems were observed. These differences may be reflective of sample specific differences (e.g., target adolescents were involved in higher levels of deviant behavior or more problematic target adolescent boys dating younger girls); further research that examines gender and age specific hypotheses is necessary. Although our results are consistent with peer socialization processes, the data are non-experimental and thus inconclusive with respect to causal explanations. In addition, our sample was restricted to middle school students who dated other middle school students at their school. Although this inclusion criterion was necessary to identify partner characteristics, the exclusion of adolescents dating peers from another school or age group could have influenced our findings. Likewise, the sample was limited to youth with same-sex friendships and other-sex romantic partners. Little is known about friend and peer group influences on romantic relationship formation in sexual minority youth. However, it seems reasonable that differences in the availability and identification of potential romantic partners for sexual minority adolescents would have implications for partner selection and socialization processes. Overall, these constraints are balanced against the use of a prospective longitudinal design that allowed for the identification of partners' pre-relationship characteristics and isolation of friend and partner characteristics. These assets allowed us to identify discrete patterns of selective pairing and identify ways in which the pairing of certain adolescent and partner characteristics predict changes in emergent adolescent behavior.

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